

Lecanorchis amethystea (Orchidaceae), A New Species from Kochi Prefecture, Japan

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Lecanorchis amethystea Sawa, H. Fukunaga & S. Sawa (Orchidaceae) is described from Kochi Prefecture, Japan. *Lecanorchis amethystea* is similar to *L. nigricans* Honda, but detailed morphological comparison supports its status as a new species. It is easily distinguished by the following combination of characters: 1) longer stem; 2) longer inflorescence and infructescence, because of longer internodes; 3) yellowish white, narrower sepals and petals; 4) 5-nerved and slightly 3-lobed labellum; 5) bright brown, ascending capsule; 6) column more than half fused with labellum; and 7) column basally pubescent.

Key words: Kochi, *Lecanorchis amethystea*, new species, Orchidaceae

Lecanorchis Blume (Orchidaceae) comprises a group of mycoparasitic plants with numerous clustered, tuberous roots and an erect, branched or unbranched stem (Blume 1856). A characteristic feature of *Lecanorchis* is the presence of a calyculus, a cup-like structure between the base of the perianth and the apex of the ovary. The genus comprises about thirty species and/or varieties extending across a large area between Southeast Asia, Taiwan, New Guinea and Japan (Ohwi 1965, Maekawa 1971, Seidenfaden 1978, Satomi 1982, Lin 1987, Hashimoto 1990, Seidenfaden & Wood 1992). A new species from Kochi Prefecture, Shikoku, Japan, is described below.

Lecanorchis amethystea Sawa, H. Fukunaga & S. Sawa, **sp. nov.** (Figs. 1-3)

Affine *Lecanorchidi nigricanti* Honda, sed scapo valde longis, spica valde longa, perianthio chrysoleuco, sepalo et petalo tri-nervium etiam angusto, label-

lo apice amethysteo etiam leviter tri-lobatum, 5-nervium, columna apice oxy-lacunoso, connato cum labello ultra 1/2, base leviter pubescenti, et capsula etiam herba fulvescenti diversum differt.

Typus: JAPAN, Shikoku, Kochi Pref., Muroto-shi, Murotomisaki-cho, Muroto cape, alt. 160 m, 26 July 1987, *Y. Sawa SC-1702* (Holotype TI, isotype MBK).

Plants mycoparasitic, without chlorophyll, 20-45 cm tall. **Stem** 10-30 cm long, branched at base, yellowish white at flowering, brownish black at fruiting, glabrous, 1.5 mm in diameter; sheaths membranaceous, scale-like. **Inflorescence** solitary, simple or occasionally branched basally branched, 6-15 cm long, 4-15 flowered, bright brown, pedicellate; floral bracts similar to cauline sheaths, obliquely lanceolate, 1.8 mm long, 1.1 mm wide; internodes 5-10 mm long. **Flowers** aromatic; sepals and lateral petals widely spreading, 14-16 mm

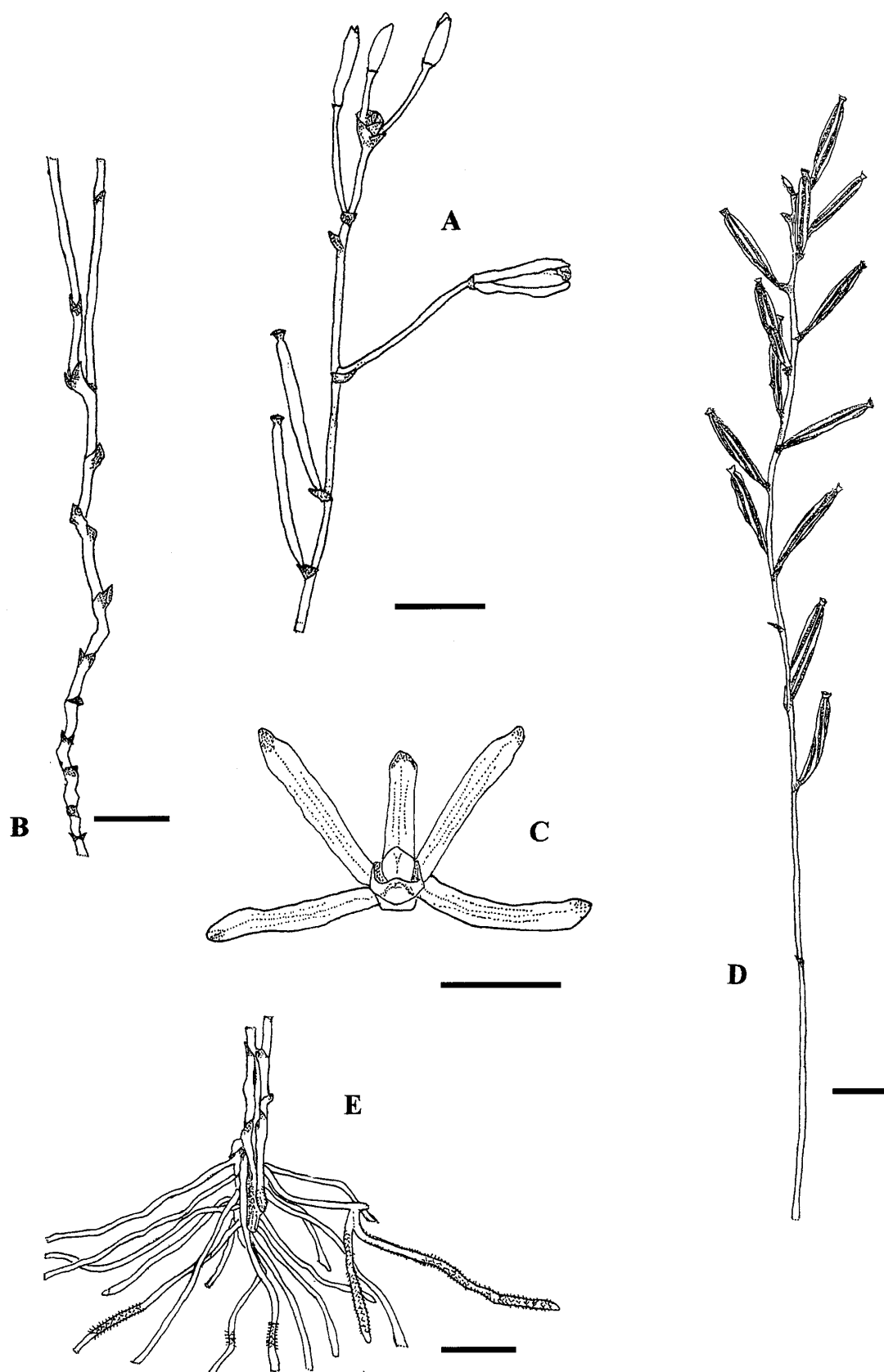


FIG. 1. *Lecanorchis amethystea*. Illustration based on Y. Sawa SC-1702 (TI, MBK). A. Inflorescence. B. Stem. C. Flower. D. Infructescence. E. Root. Bars, 1 cm.

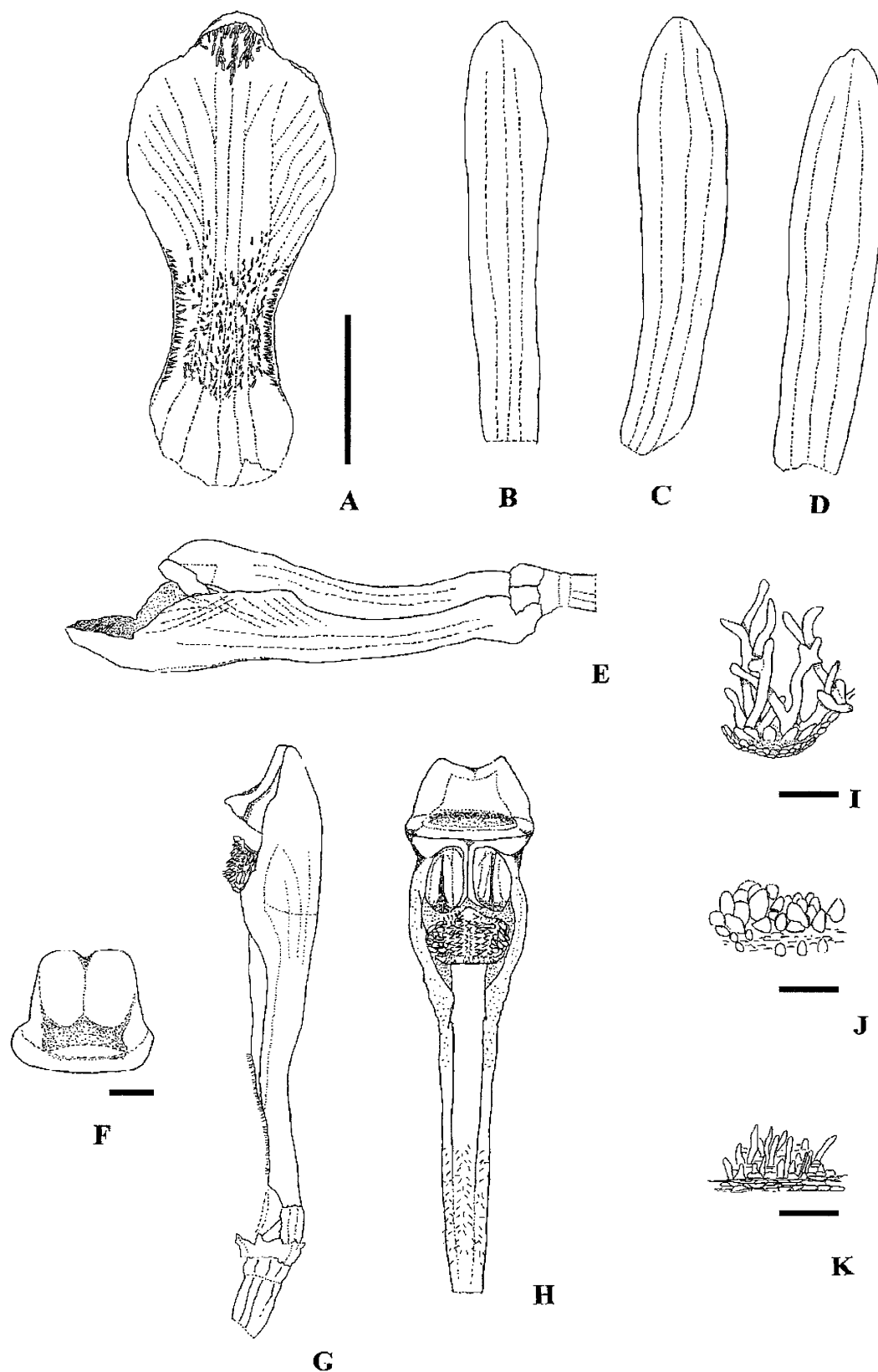


FIG. 2. Flower of *Lecanorchis amethystea*. Illustrations based on H. Fukunaga and Y. Sawa FC-0007 (MBK). A. Labellum. B. Petal. C. Lateral sepal. D. Dorsal sepal. E. Labellum and column from side. F. Anther cap. G. Column from side. H. Column, ventral view. I. Hairs at apex of labellum. J. Hairs at middle of labellum. K. Hairs at base of labellum. Bars; 5 mm (A-E, G, H), 1 mm (F), 0.15 mm (I), 0.05 mm (J, K).

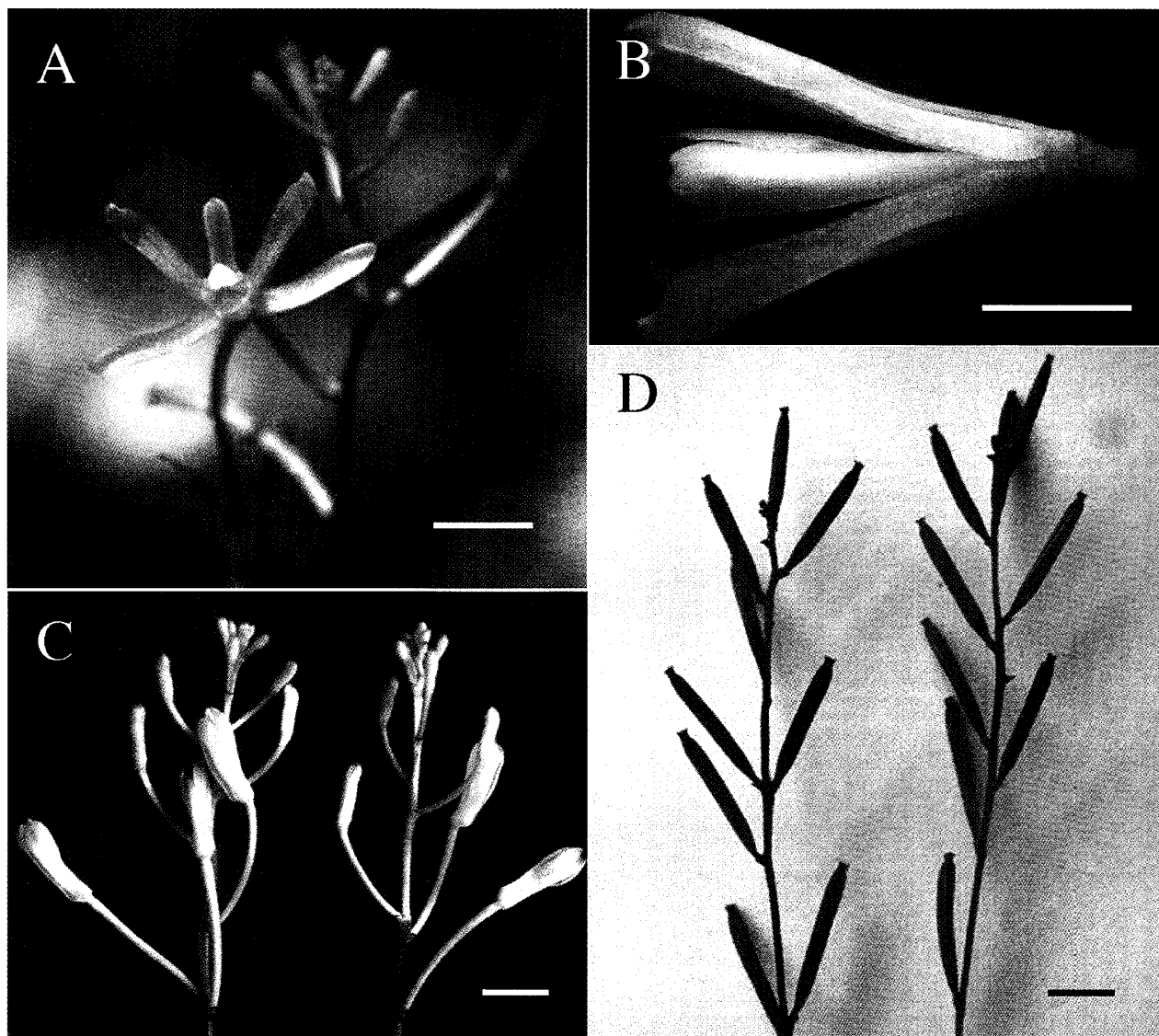


FIG. 3. Photographs of *Lecanorchis amethystea*. Flowering plant at type locality. A. Flower in nature. B. Flower from abaxial surface, abaxial sepal removed. C. Pale brown inflorescence with yellowish white flowers. D. Bright brown infructescence. Bars; 1 cm (A, C, D), 0.5 cm (B). Photographed 24 August 2003 (A), 27 July 1987 (B), 4 August 1987 (C), 28 October 1987 (D).

long, 2.5–2.9 mm wide, 3-nerved, yellowish white, veins darker; ovary slender, pedicel-like, 17 mm long; labellum 14–15 mm long, 7 mm wide, yellowish white, veins darker, slightly 3-lobed, 5-nerved, apical part of adaxial surface with purplish hairs, basal part of adaxial surface with whitish papillae; column 12.5 mm long, more than half fused with labellum. **Capsules** 21–30 mm long, bright brown, rarely with excrescences, ascending at 20°–45° angle from axis.

Japanese name: Muroto-muyouran

Distribution: Japan (Kochi Prefecture)

Notes: *Lecanorchis amethystea* was first discovered in broadleaved evergreen forests of *Castanopsis sieboldii* (Makino) Hatusima ex T. Yamazaki et Mashiba, *Quercus phillyraeoides* A. Gray and *Machilus thunbergii* Siebold et Zucc. on 7 July 1987. Flowering was observed on 26 July 1987. *Lecanorchis amethystea* is named for the amethyst colored region of the labellum. Its range is restricted to two valleys on Cape Muroto in Kochi Prefecture. Among the species of *Lecanorchis* found in Kochi Prefecture, only *L. nigricans* flowers in the summer. *Lecanorchis amethystea*, like *L. nigricans*

TABLE 1. Comparison of *Lecanorchis amethystea* and *L. nigricans*.

Characters	<i>L. amethystea</i>	<i>L. nigricans</i>
Height of plant	20-45 cm	9-27 cm
Average height of plant	32 cm	18 cm
Color of shoot during development	yellowish white	purplish white
Color of shoot in fruit	Brownish black	black
Length of inflorescence and infructescence	6-15 cm	3-8 cm
Color of inflorescence during development	pale brown	blackish brown
Color of infructescence	bright brown	black
Length of internodes on upper half of inflorescence (infructescence)	5-10 mm	1-3 mm
Number of flowers per inflorescence	4-15	3-12
Flowering time in Kochi	late Jul-late Aug	Mid Jul-early Sep
Color of sepals and petals	yellowish white	purplish white
Width of sepal and lateral petal	2.5-2.9 mm	3.0-3.8 mm
Shape of labellum	slightly 3-lobed	entire
Colored area of labellum	1/4-1/5	1/3
Number of nerves of dorsal sepal, lateral sepals, lateral petals and labellum	3, 3, 3, 5	5, 3-5, 3, 7
Shape of anther cap	M-shaped	smoothly trilobed
Proportion of column fused with labellum	1/2-2/3	1/2
Pubescence at base of column	interspersed	None
Color of capsule	bright brown	Black
Angle between capsule and inflorescence axis	20-45°	70-90°
Excrescences on capsules	rare	None

(Honda, 1931), blooms between late July and late August., but it can be easily distinguished from *L. nigricans* by: 1) the longer stem; 2) the longer inflorescence and infructescence, because of longer internodes; 3) the yellowish white, narrower sepals and petals; 4) the 5-nerved and slightly 3-lobed labellum; 5) the bright brown capsules; 6) the ascending capsules; 7) the column more than a half fused with the labellum; and 8) the pubescence at the base of the column. The shoot of *L. amethystea* is relatively paler than in *L. nigricans*. The anther cap of *L. amethystea* is M-shaped in comparison with the anther cap of *L. nigricans*, where it is smoothly trilobed (see also Table 1). *Lecanorchis amethystea* occasionally produces excrescences on the surface of the capsules, whereas *L. nigricans* does not. Based on these morphological differences, *L. amethystea* is recognized and described here as a new species.

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References

- Blume, C. L. 1856. *Lecanorchis* Bl. Mus. Bot. Lugduno-Batavi 2: 177-192. Brill, Leiden.
- Hashimoto, T. 1990. A taxonomic review of the Japanese *Lecanorchis* (Orchidaceae). Ann. Tsukuba Bot. Gard. 9: 1-40
- Honda, M. 1931. Nuntia ad Floram Japoniae XIV. Bot. Mag. Tokyo 45: 469-471, 493-494.
- Lin, T. P. 1987. Native Orchids of Taiwan, 3. 300 pp. Southern Materials Center, Taipei. (In Chinese with English descriptions)

- Maekawa, F. 1971. *Lecanorchis* Blume, The wild orchids of Japan in colour. 497 pp. Seibundo-shinkosha, Tokyo. (In Japanese with English summary)
- Ohwi, J. 1965. Flora of Japan, rev. ed. 1560. Shibundo, Tokyo. (In Japanese with Latin nomenclature)
- Satomi, N. 1982. Ranka (Orchidaceae) *In*: Satake, Y. *et al.* (eds.), Wild flowers of Japan: Herbaceous Plants I. Heibonsha Ltd., Pub., Tokyo, pp 187-235. (In Japanese)
- Seidenfaden, G. 1978. Orchid genera in Thailand VI. Neottiodeae Lindl. Dansk Bot. Arkiv 32: 1-195.
- & J. J. Wood. 1992. The orchids of Peninsular Malaysia and Singapore. Olsen & Olsen, Fredensborg. 779pp.

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